

A COMPOSITE STUDY OF THE TROPICAL CYCLONE OUTFLOW LAYER

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Studies of the tropical cyclone (TC) outflow layer structure have been previously conducted with sparse spatial and temporal data. With the spatially and temporally complete European Centre for Medium-Range Weather Forecasts' ERA-Interim Reanalysis, this research composited a subset of TCs over a 36 year period (1979-2014) in the Atlantic Basin stratified by intensity for ten meteorological variables. The subset included TC center points from the second generation Hurricane Database (HURDAT2) that 1) were south of 40 N, 2) did not undergo an extra-tropical transition, and 3) did not make landfall for greater than 6 h. These three filters removed TC center points where the TCs underwent significant structural transitions. Intensities were divided into five groups: tropical depressions, tropical storms, category one through five hurricanes, and the typical segregation of categories into minor hurricanes (categories one and two) and major hurricanes (categories three through five). Of the ten variables used, four will be discussed: radial wind, divergence of radial wind, tangential wind, and relative vorticity. Open questions regarding structural similarities and differences between the weakest (tropical depression) and strongest (category three through five) TC intensity composites will be raised. Finally, further criteria for creating a finer subset of TC center points will be explored.